

ANTIBIOTIC USE IN SWEDEN – THE SWEDRES REPORT 2007 HAS BEEN PUBLISHED

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The benefits of antibiotic treatment come with the risk of antibiotic resistance development. It is therefore important to monitor – and, where possible, reduce – the use of antimicrobials.

The Swedish Strategic Programme against Antibiotic Resistance (Strategigruppen för Rationell Antibiotikaanvändning och Minskad Antibiotikaresistens; Strama) and the Swedish Institute for Infectious Disease Control (Smittskyddsinstitutet; SMI) have just published “SWEDRES/2007”, the seventh report on Swedish antimicrobial utilisation and resistance in human medicine [1].

Antibiotic use

The report presents data from the European Surveillance of Antimicrobial Consumption project (ESAC) showing the trend in 10 European countries in the past eight years [2]. France had the highest antibiotic consumption, while the Netherlands had the lowest. Sweden lies in the lower range, with 15.6 defined daily doses (DDD) per 1,000 population sold per day in 2007.

Community care

After a steady decrease in community care in the years before 2005, the consumption of antimicrobials in Sweden has – for reasons that are unclear – been increasing again continuously since 2004. The rise concerns children in particular; more than one in three children under the age of seven were treated with antibiotics in 2007. Across all age groups, it was more than a quarter of the Swedish population who received at least one antibiotic treatment. The highest use was observed in Stockholm, with 485 prescriptions per 1,000 inhabitants.

The increase in usage was seen for most antibiotic classes, including beta-lactamase-sensitive penicillins and tetracyclines, which together accounted for half of the antibiotic doses prescribed in 2007. The use of certain antimicrobials had declined, namely cephalosporins (by 6%), fluoroquinolones (by 5.5%), and trimethoprim (by 12%). This trend is indicative of compliance with Swedish guidelines to restrict the use of fluoroquinolones in the treatment of lower urinary tract infections. The guidelines recommend instead the use of nitrofurantoin, an antibiotic that was prescribed 24% more often in 2007 compared to 2006. However, the overall consumption of quinolones is still considered high, and there are concerns that this may facilitate the spread of the quinolone-resistant hypervirulent strain of *Clostridium difficile* ribotype O27/nap1, should it be introduced to Sweden.

Hospital care

Antibiotic treatment in hospital care has increased continuously since the end of the 1990s. Of 1.55 DDD/1,000/day used in 2007, cephalosporins, fluoroquinolones, beta-lactamase-resistant penicillins

and tetracyclines were chosen most frequently. Consumption of the latter two drugs has risen considerably since 2005. The higher use of tetracycline in hospitals may be explained by the rising number of genital infections caused by *Chlamydia trachomatis* as the rate of prescription of tetracyclines reflects the number of reported cases of chlamydia infection in different counties in Sweden.

Antibiotic resistance

Although antibiotic consumption and resistance levels in Sweden are still relatively low, resistant pathogens are becoming more frequent. The SWEDRES report presents details on the occurrence of a list of drug-resistant pathogens that are either based on mandatory reporting or on voluntary reporting from the clinical microbiology laboratories.

The most notable rise was seen in extended spectrum beta-lactamase (ESBL)-producing *Enterobacteriaceae*. In the 11 months after their notification was made mandatory in February 2007, 2,099 cases were reported; most of the isolates were *Escherichia coli*. ESBL-producing *Enterobacteriaceae* have therefore become twice as common in Sweden as methicillin-resistant *Staphylococcus aureus* (MRSA) which have been notifiable since 2000. Cases of MRSA have increased by a further 7% in the past year, but the proportion of resistant isolates among invasive *S. aureus* was with 0.5% lower than in 2006, while proportions as high as 40% are seen in some other European countries. The proportion of Panton-Valentine leukocidin (PVL)-positive MRSA is increasing slowly, in particular isolates of the type “USA300” which is spreading rapidly internationally.

In Sweden, both ESBL-resistance and MRSA has now become more common in the community than in the healthcare sector.

Other resistances covered in the report are *Streptococcus pneumoniae*, *Enterococcus faecium* and *faecalis*, *Haemophilus influenzae*, *Klebsiella pneumoniae*, *Helicobacter pylori*, *Campylobacter jejuni/coli*, *Neisseria gonorrhoeae*, *Mycobacterium tuberculosis* and *Candida spp.*

References

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2. The European Surveillance of Antimicrobial Consumption (ESAC). Available from: <http://www.esac.ua.ac.be/>

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